**Circular Convolution in Time Domain**



CirConvTimeDomain.m

clc;

close all;

clear all;

x=input(' Enter the first sequence ');

h=input(' Enter the second sequence ');

N1=length(x);

N2=length(h);

N=max(N1,N2); % length of sequence

x=[x zeros(1,N-N1)]; % modified first sequence for the length N

h=[h zeros(1,N-N2)]; % modified second sequence for the length N

y=cconv(x,h,N);

% To display and plot circular convolution

n=1:N;

disp(' Output sequence of circular convolution ');

disp(y); % To view output in command window

pause;

stem(n,y); % plotting circular convolution

grid minor;

xlabel(' Time index ');

ylabel(' Amplitude ');

title(' Circular convoluion sequence of x and h ');

Enter the first sequence [2 4 6 8]

Enter the second sequence [1 2 3 4]

Output sequence of circular convolution

52 56 52 40

Warning: MATLAB has disabled some advanced graphics rendering features by switching to software OpenGL. For more

information, click here.

>>

**Circular Convolution in Frequency Domain**

CirConvFreqDomain.m



clc;

close all;

clear all;

x=input(' Enter the first sequence ');

h=input(' Enter the second sequence ');

N1=length(x);

N2=length(h);

N=max(N1,N2); % length of sequence

x=[x zeros(1,N-N1)]; % modified first sequence

h=[h zeros(1,N-N2)]; % modified second sequence

y=ifft(fft(x,N).\*fft(h,N)); % circular convolution by DFT and IDFT

n=1:N;

disp(' output sequence of circular convolution ');

disp(y); % To view output in command window

pause;

stem(n,y); % Plotting circular convolution

grid minor;

xlabel(' Time index ');

ylabel(' Amplitude ');

title(' Circular convolution sequence of x and h ');

Enter the first sequence [2 4 6 8]

Enter the second sequence [1 2 3 4]

output sequence of circular convolution

52 56 52 40

>>

**Linear Convolution by Circular convolution in time domain**

LinearConvByCirConvTimeDomain.m

clc;

clear all;

close all;

x=input(' Enter the first sequence ');

nx=input(' Enter the index of first sequence ');

h=input(' Enter the impulse response of the system ');

nh=input(' Enter the index of impulse response ');

% Circular Convolution order is N

N=length(x)+length(h)-1;

x=[x zeros(1,N-length(x))];

h=[h zeros(1,N-length(h))];

ny=min(nx)+min(nh):max(nx)+max(nh);

y=cconv(x,h,N); % circular convolution

disp(' output sequence of linear convolution ');

disp(y); % To view output in command window

disp(ny);

pause;

stem(ny,y); % Plotting linear convolution

grid minor;

xlabel(' Time index ');

ylabel(' Amplitude ');

title(' Linear convolution of sequence of x and h ');

Enter the first sequence [2 4 6 8]

Enter the index of first sequence [0 1 2 3]

Enter the impulse response of the system [1 2 3 4]

Enter the index of impulse response [0 1 2 3]

output sequence of linear convolution

2.0000 8.0000 20.0000 40.0000 50.0000 48.0000 32.0000

0 1 2 3 4 5 6

>>



**Linear convolution in Frequency Domain**

LinearConvByCirConvFreqDomain.m

clc;

clear all;

close all;

x=input(' Enter the first sequence ');

n1=input(' Enter the index of first sequence ');

h=input(' Enter the impulse response of the system ');

n2=input(' Enter the index of impulse response ');

ny=[n1(1)+n2(1):n1(length(x))+n2(length(h))];

% Circular Convolution order is N

N=length(x)+length(h)-1;

x=[x zeros(1,N-length(x))];

h=[h zeros(1,N-length(h))];

y=ifft(fft(x,N).\*fft(h,N)); % circular convolution by DFT and IDFT

disp(' output sequence of linear convolution ');

disp(y); % To view output in command window

disp(ny);

pause;

stem(ny,y); % Plotting linear convolution

grid minor;

xlabel(' Time index ');

ylabel(' Amplitude ');

title(' Linear convolution sequence of x and h ');

Enter the first sequence [2 4 6 8]

Enter the index of first sequence [0 1 2 3]

Enter the impulse response of the system [1 2 3 4]

Enter the index of impulse response [0 1 2 3]

output sequence of linear convolution

2.0000 8.0000 20.0000 40.0000 50.0000 48.0000 32.0000

0 1 2 3 4 5 6

>>

